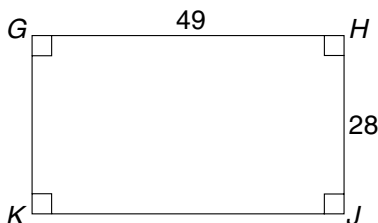
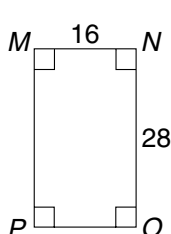
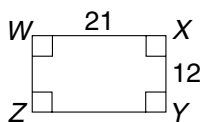
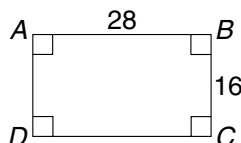


**LESSON**  
**7-6** **Practice B**  
**Similar Figures**

1. Which figures are similar to  $ABCD$ ?



2. A room is 16 ft wide and 48 ft long. What is the length to width ratio?

3. In  $\triangle XYZ$ ,  $XY = 27$  cm,  $YZ = 15$  cm,  $XZ = 21$  cm. If  $\triangle ABC$  is similar to  $\triangle XYZ$  and the ratio of the corresponding sides of the triangles is 2 to 3, find the lengths of  $AB$ ,  $BC$  and  $AC$ .

4. Hue is 56 in. tall. His friend is 42 in. tall. Hue's shadow is 24 in. long. How long is his friend's shadow at the same time?

5. A picture of a school's mascot is 18 in. wide and 24 in. long. It is enlarged proportionally to banner size. If the width is enlarged to 63 in., what is the length of the banner?

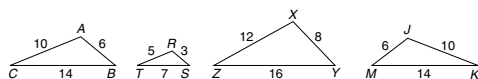
6. Carol has a 24 cm  $\times$  36 cm photo that she reduces to  $\frac{3}{4}$  of its size. What are the dimensions of the new photo?

7. Erik is drawing a picture of his school's basketball court. The actual basketball court is 84 ft long and 50 ft wide. If Erik draws the court with a length of 21 in., what will be the width?

8. IMAX theaters have the world's largest screens. There are numerous IMAX theaters around the world. The Henry Ford Museum in Dearborn, Michigan hosts an IMAX theater with a 60 ft  $\times$  84 ft screen. If a classroom projection screen were changed to be in direct proportion with the IMAX screen at the Henry Ford Museum, the dimensions would be 5 ft  $\times$  \_\_\_\_ ft.

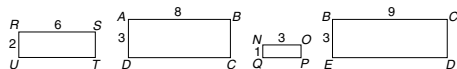
# **LESSON Practice A** **7-6 Similar Figures**

1. Which triangles are similar to  $\triangle ABC$ ?



$$\triangle ABC \approx \triangle RST \approx \triangle JMK$$

2. Which rectangles are similar to  $RSTU$ ?



$$NOPQ \text{ and } BCDE$$

3. A room is 36 ft long and 18 ft wide. What is the length to width ratio?

$$\frac{2}{1}$$

4. In  $\triangle XYZ$ ,  $XY = 10$  cm,  $YZ = 6$  cm,  $XZ = 8$  cm. If  $\triangle ABC$  is similar to  $\triangle XYZ$  and the ratio of the corresponding sides of the triangles is 1 to 2, find the lengths of  $AB$ ,  $BC$  and  $AC$ .

$$AB = 5 \text{ cm,}$$

$$BC = 3 \text{ cm,}$$

$$AC = 4 \text{ cm}$$

5. A tree casts a 30 ft shadow. At the same time, a 6 ft man casts a 4 ft shadow. How tall is the tree?

$$45 \text{ ft}$$

6. A photo that is 8 in. wide and 12 in. long is enlarged to a poster. If the width is enlarged to 24 in., what is the length of the poster?

$$36 \text{ in.}$$

7. Clyde makes a copy of an 8 in.  $\times$  10 in. photo, reducing it to  $\frac{3}{4}$  of its size. What are the dimensions of the new photo?

$$6 \text{ in.} \times 7.5 \text{ in.}$$

8. The White House, built 1792, is the oldest federal building in Washington, D.C. The building has undergone extensive remodeling over the years. The main building is four stories high and is about 170 ft long by 85 ft wide. If a replica of the White House were made with a length of 4 ft, what would be the width of the replica?

$$2 \text{ ft}$$

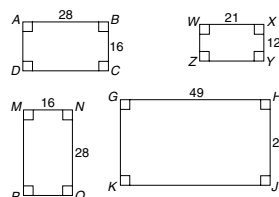
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# **LESSON Practice B** **7-6 Similar Figures**

1. Which figures are similar to  $ABCD$ ?



all figures are similar

2. A room is 16 ft wide and 48 ft long. What is the length to width ratio?

$$\frac{1}{3}$$

3. In  $\triangle XYZ$ ,  $XY = 27$  cm,  $YZ = 15$  cm,  $XZ = 21$  cm. If  $\triangle ABC$  is similar to  $\triangle XYZ$  and the ratio of the corresponding sides of the triangles is 2 to 3, find the lengths of  $AB$ ,  $BC$  and  $AC$ .

$$AB = 18 \text{ cm, } BC = 10 \text{ cm,}$$

$$AC = 14 \text{ cm}$$

4. Hue is 56 in. tall. His friend is 42 in. tall. Hue's shadow is 24 in. long. How long is his friend's shadow at the same time?

$$18 \text{ in.}$$

5. A picture of a school's mascot is 18 in. wide and 24 in. long. It is enlarged proportionally to banner size. If the width is enlarged to 63 in., what is the length of the banner?

$$84 \text{ in.}$$

6. Carol has a 24 cm  $\times$  36 cm photo that she reduces to  $\frac{3}{4}$  of its size. What are the dimensions of the new photo?

$$18 \text{ cm} \times 27 \text{ cm}$$

7. Erik is drawing a picture of his school's basketball court. The actual basketball court is 84 ft long and 50 ft wide. If Erik draws the court with a length of 21 in., what will be the width?

$$12.5 \text{ in.}$$

8. IMAX theaters have the world's largest screens. There are numerous IMAX theaters around the world. The Henry Ford Museum in Dearborn, Michigan hosts an IMAX theater with a 60 ft  $\times$  84 ft screen. If a classroom projection screen were changed to be in direct proportion with the IMAX screen at the Henry Ford Museum, the dimensions would be 5 ft  $\times$  \_\_\_\_ ft.

$$7$$

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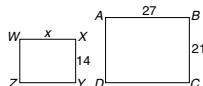
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# **LESSON Practice C** **7-6 Similar Figures**

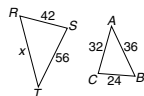
The figures in each pair are similar. Find the scale factor to solve for  $x$ .

1.



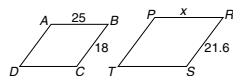
$$x = 18$$

2.



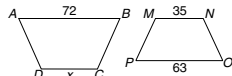
$$x = 63$$

3.



$$x = 30$$

4.



$$x = 40$$

5. Sal is 77 in. tall. He casts a shadow 14 ft long. His dad casts a 12 ft shadow at the same time. How much shorter is Sal's dad than Sal?

$$11 \text{ in.}$$

6. A house measures 90 ft long by 66 ft wide. If the blueprints indicated 1 cm = 3 ft, what are the dimensions of the house on the blueprints?

$$30 \text{ cm long by } 22 \text{ cm wide}$$

7. M. C. Escher, a Dutch painter, explored mathematical symmetry through many of his works. In 1931, he painted *Carruba Tree*. The picture is 32 cm by 24.2 cm. If a replica were made reducing it to  $\frac{1}{4}$  of its size, what would the dimensions of the replica be?

$$8 \text{ cm} \times 6.05 \text{ cm}$$

8. The Golden Gate Bridge in California is 8,976 ft long and 90 ft wide. What would be the length of a reproduction of the bridge if the width were 2 ft? Round the answer to the nearest tenth of a unit.

$$199.5 \text{ ft}$$

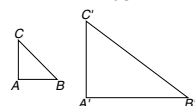
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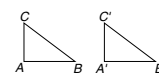
# **LESSON Reteach** **7-6 Similar Figures**

## Similar Polygons



same shape  
corresponding angles are congruent  
 $\angle A \cong \angle A'$ ,  $\angle B \cong \angle B'$ ,  $\angle C \cong \angle C'$   
usually different size  
corresponding sides are in proportion  
 $\frac{AB}{A'B'} = \frac{BC}{B'C'} = \frac{AC}{A'C'}$

## Congruent Polygons



same shape  
corresponding angles are congruent  
 $\angle A \cong \angle A'$ ,  $\angle B \cong \angle B'$ ,  $\angle C \cong \angle C'$   
same size  
corresponding sides are congruent  
 $AB \cong A'B'$ ,  $BC \cong B'C'$ ,  $AC \cong A'C'$

Complete to tell if the polygons are similar.

1. a. corresponding angles:  $\angle A$  and  $\angle E$ ,  $\angle B$  and  $\angle F$ ,  
 $\angle C$  and  $\angle G$ ,  $\angle D$  and  $\angle H$

- b. all corresponding angles congruent? **yes**

- c. corresponding sides:  $\overline{AB}$  and  $\overline{EF}$ ,  
 $\overline{BC}$  and  $\overline{FG}$ ,  $\overline{CD}$  and  $\overline{GH}$ ,  
 $\overline{AD}$  and  $\overline{EH}$

- d. The ratio of each pair of corresponding sides is:

$$\frac{AB}{EF} = \frac{6}{7.5}, \frac{BC}{FG} = \frac{8}{10}, \frac{CD}{GH} = \frac{6}{7.5}, \frac{AD}{EH} = \frac{8}{10}$$

- e. Are the corresponding sides proportional? Explain.

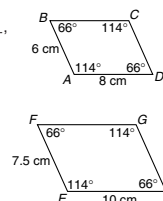
$$\text{yes; equal cross products } \frac{6}{7.5} \cdot \frac{8}{10} \rightarrow 60 = 60$$

- f. The **scale factor** is the simplest form of the ratio of the corresponding sides. What is the scale factor for these parallelograms?

$$\frac{4}{5}$$

- g. Are the parallelograms similar? Explain.

$$\text{yes; corresponding } \angle\text{s congruent, corresponding sides proportional}$$



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